



Agency for Healthcare Research and Quality  
Advancing Excellence in Health Care



NATIONAL  
**GUIDELINE**  
CLEARINGHOUSE

## General

### Guideline Title

Manual medicine guidelines for musculoskeletal injuries.

### Bibliographic Source(s)

Braddock EJ, Greenlee J, Hammer RE, Johnson SF, Martello MJ, O'Connell MR, Rinzler R, Snider M, Swanson MR, Tain L, Walsh G, Walsh G. Manual medicine guidelines for musculoskeletal injuries. Sonora (CA): Academy for Chiropractic Education; 2013 Dec 1. 70 p.

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## Recommendations

### Major Recommendations

#### History

Take a related history from the patient. It may include but not be limited to:

#### Mechanism of Injury

- Details of the accident or the injury (i.e., specific or cumulative trauma, body parts involved initially or recruited due to altered biomechanics)

#### Symptoms

- Current symptoms (i.e., intensity, frequency and duration, quality of pain/altered sensation, impairment or effect on activities of daily living)
- Initial and subsequent symptoms:
  - Improving, getting worse, or staying the same
  - Relieving or aggravating activities
- Associated symptoms (i.e., fever, changes in bowel or bladder function, numbness and tingling)

#### Treatment to Date

- Type of treatment

- Response to treatment provided (i.e., medications, manual treatment, self-care, etc.)

#### Physical Activities

- Occupational
- Recreational
- Exercises
- Other

#### Additional Medical History

- General health (i.e., changes in appetite, weight, energy level, sleep pattern)
- Prior injuries (i.e., industrial injuries, motor vehicle accidents, fractures)
- Prior disability or impairment
- Surgeries
- Prior similar complaints
- Serious illnesses
- Current medications
- Other risk factors (e.g., weight, tobacco, alcohol, drugs, or hobbies)

#### Family History

#### Psychosocial Factors That May Delay Recovery

#### Examination

- General appearance (development, nutrition, body habits, deformities)
- Vital signs
- Regional orthopedic and neurological exam (i.e., ranges of motion; motor, sensory, reflex testing)
- Aberrant movement patterns
- Examine related body parts (i.e., upper extremity examination with cervical spine complaints)
- Postural inspection, percussion, and palpation
- Gait analysis
- Additional testing as indicated may include:
  - Girth measurements in the extremities
  - Functional muscle testing
  - Vascular testing

#### Diagnostic

Testing should be done with best clinical judgment to establish or support the diagnosis or for the necessary treatment of the patient.

X-ray or other diagnostic studies may be performed if patient fails to respond in 4 weeks or experiences a significant increase in symptoms or impairment.

#### X-ray Indications

Typically X-rays may be indicated within the first 30 days of treatment if one of the following is present:

- Fever greater than 100 degrees that persists for longer than 48 hours
- Intermittent fever of unknown origin with focal pain
- Unrelenting night pain or pain at rest
- Aberrant pain, paresthesia, or numbness
- Motor deficit
- Progressive neurological deficit
- Significant trauma
- Suspicion of ligament injury or instability
- Suspicion of fracture as a result of repetitive trauma sufficient to cause fracture
- Suspicion of progressive disease (i.e., osteopenia, osteoporosis, ankylosing spondylitis, metabolic disease, scoliosis, or spondylolisthesis for

which symptoms suggest spinal stenosis with progressive neurological deficit)

- Drug or alcohol abuse
- Chronic use of steroids
- Age over 50
- History of chronic pain in the same body part
- Previous spinal surgery to same body area
- Unexplained weight loss or changes in bowel/bladder function
- History of malignancy with suspicious examination findings

#### Magnetic Resonance Imaging (MRI) Indications

- Loss of bowel or bladder control
- Significant, persistent, or progressive neurological deficit
- Suspected:
  - Myelopathy
  - Metastasis
  - Tumor
  - Osteomyelitis
  - Paraspinal abscess/fluid
  - Vascular malformation
  - Pathological fracture
  - Congenital spinal anomalies
  - Post-surgical MRI with gadolinium
  - Interarticular derangement
  - Ligament laxity
  - Spinal instability
  - Avascular necrosis
- Failure to respond to conservative care

#### MRI with Gadolinium

- MRI with gadolinium indicated in cases of recurrence or persistent post-surgical symptoms

#### Computed Tomography (CT) Indications

- Refractory radiculopathy
- Focal motor deficit
- Fracture
- Foreign bodies
- Post-operative assessment
- Congenital/developmental fracture or abnormalities
- Suspected spondylolysis in the absence of positive plain film findings
- Where MRI contraindicated (pacemaker, implants, claustrophobia)
- Suspected spinal stenosis

#### Bone Scan

- To assess bone trauma in situations where ordinary x-rays do not reveal signs of trauma
- Suspected metabolic disease (i.e., Paget's disease, bone tumors, joint or bone infection, fibrous dysplasia, avascular necrosis, or unexplained bone pain)
- To determine the age of a fracture

#### Electrodiagnostic Studies

- Persistent neurological symptoms necessitating differentiation of radicular vs. peripheral neuropathy
- Conditions non-responsive to conservative care requiring determination of the severity of the deficit
- To differentiate between neurological and muscular disorders

## Laboratory Indications

- Persistent fever
- Multiple or migrating joint pain or swelling
- Lack of response to treatment determined to be appropriate for the diagnosis
- Suspicion of infection or family history of systemic, metabolic, rheumatoid, or autoimmune conditions

## Patient Education

Discuss the diagnosis and treatment options.

Discuss reasonable expectations for the resolution of symptoms, and return to work or other activities. Inform the patient that it is not uncommon for patients who recover from the initial episode to have another episode, but improvement is to be expected. Reassure the patient of the anticipated recovery or improvement.

Instruct the patient in appropriate self-guided care. This may include discussion of:

- Limited bed rest with gradual return to normal activities
- Activities or positions to limit or avoid
- Continuing activities within limits permitted by pain or other symptoms
- Posture and proper body mechanics
- Ergonomic recommendation/counseling
- Gentle stretching
- Ice/heat
- Instruction in exercises

Discuss patient's use of over-the-counter (OTC) medications or need for prescriptive medication.

## Treatment

### Manual Therapy

Manual adjustive manipulation procedures and other manual therapies including manipulation utilizing instrumentation. The effect is to normalize joint mobility and nerve function in addition to pain reduction, with frequent compensatory changes in other areas. Secondary changes in peripheral neurological function may include relief from somatic pain syndromes, nerve compression syndromes, functional disorders and anatomical pain syndromes.

The primary focus of manual therapy is to address functional abnormalities of joints, including fixation, hypermobility or hypomobility of the joint. Contributing factors of functional abnormalities include muscular hypertonicity or weakness, ligamentous shortening or elongation and articular adhesions if not corrected. The mechanism for blockage of articular movement may involve mechanical joint locking, disc disorders and/or intra-articular jamming of various tissues, including synovial capsules.

### Complementary Procedures

Complementary procedures are intended to normalize joint function, decrease muscle spasm, decrease pain, reduce edema or inflammation, improve muscle tone, increase joint mobility or stability, increase soft tissue flexibility, decrease pain, and maximize integrity of fibrotic repair.

Complementary procedures may include but are not limited to:

- Manual or mechanical traction
- Neuromuscular re-education
- Myofascial release
- Trigger point therapy
- Muscle stretch techniques
- Mobilization
- Use of supports, braces, splints, or orthotics

Physical medicine modalities and procedures may be of benefit in conjunction with manipulation.

## Phases of Care

## Active Care

Active care includes methods of treatment requiring active involvement, participation and responsibility on the part of the patient. This may be supervised in office or the patient may be provided with instructions for self-care. Active care in each phase of treatment should begin when, in the treating physician's judgment, it is appropriate to do so. This would be based upon, among other things, the severity of the injury, the area of injury, the patient's age and/or other limiting factors.

Phases of active care include:

- *Acute*: Temporarily limit or avoid specific activities known to increase or aggravate mechanical stress on the injured region. In order to avoid deconditioning, low stress aerobic and flexibility exercises can be instituted as soon as tolerated.
- *Sub-acute*: Recommended exercise quotas that are gradually increased result in better outcomes. Endurance programs (walking/biking/swimming) can be initiated during this phase.
- *Chronic*: Strengthening and stabilization exercises for the injured region can commence immediately.

Gradual increase in time per session, amount, and intensity of exercises as the patient demonstrates improvement.

Reduce, modify, or discontinue exercise program if peripheralization (spread of symptoms) occurs.

## Management of Chronic Conditions

Chronic pain syndrome is defined as persistent pain which lasts more than three months, which interferes with physiological or psychological function and which requires ongoing treatment. In general, chronic pain syndrome includes:

- Musculoskeletal conditions
- Pre-existing and/or progressive degenerative conditions
- Failed back surgery syndrome
- Neurological disorders and psychological issues leading to drug dependence
- High levels of stress and anxiety
- Pre-existing or latent psychopathology

The condition is not expected to completely resolve but treatment can be expected to result in some functional improvement and stabilization or slowing of progressive degenerative changes. Patients with chronic pain syndromes whose pain has become intractable in spite of initial care and secondary treatment may benefit from evaluation and treatment including spinal manipulative techniques, physical medicine, pain management and physical conditioning such as therapeutic and rehabilitative exercise to help promote functional recovery. Frequently, chronic pain syndrome patients require supportive care to maintain their therapeutic gains or clinical status.

For information on contraindication or modifications of spinal manipulation refer to the "Contraindications" field in this summary.

Refer to the original guideline document for information about definitions and goals of care, criteria for referral, treatment and temporary disability, and complicating factors.

## Clinical Algorithm(s)

None provided

## Scope

## Disease/Condition(s)

- Musculoskeletal injuries
- Chronic pain syndrome

## Guideline Category

Counseling

Diagnosis

Evaluation

Management

Rehabilitation

Treatment

## Clinical Specialty

Chiropractic

Physical Medicine and Rehabilitation

## Intended Users

Chiropractors

Health Care Providers

Health Plans

Managed Care Organizations

Physical Therapists

Physician Assistants

Physicians

Utilization Management

## Guideline Objective(s)

To provide recommendations for evaluation, diagnosis, treatment, and management of musculoskeletal injuries

## Target Population

Individuals with musculoskeletal injuries

## Interventions and Practices Considered

Diagnosis/Evaluation

1. Medical history including mechanism of injury, symptoms, treatment to date, physical activities, past medical history, family history, and psychosocial factors that may delay recovery
2. Physical examination including general appearance; vital signs; regional orthopedic and neurological examination; aberrant movement patterns; examination of related body parts; postural inspection, percussion and palpation; gait analysis; and additional testing as indicated
3. Diagnostic tests including x-rays, magnetic resonance imaging (MRI), MRI with gadolinium, computed tomography (CT), bone scans, electrodiagnostic studies, and laboratory studies if indicated

Treatment/Management

1. Patient education regarding diagnosis, treatment options, self-guided care, over-the-counter medication use, need for prescription medication, and reasonable expectations
2. Manual therapy/manipulation, including use of instrumentation
3. Complementary procedures including manual or mechanical traction; neuromuscular re-education; myofascial release; trigger point therapy; muscle stretch techniques; mobilization; use of supports, braces, splints or orthotics; physical medicine modalities and procedures
4. Active care (acute, sub-acute, and chronic)
5. Referral to a specialist if indicated

## Major Outcomes Considered

Resolution or reduction of pain  
 Time to return to activities of daily living and/or work activities  
 Complicating factors

## Methodology

### Methods Used to Collect/Select the Evidence

Searches of Electronic Databases

### Description of Methods Used to Collect/Select the Evidence

The databases that were used to collect the evidence were: PubMed, GOOGLE Scholar, EBSCOHost Databases, National Guideline Clearinghouse, and OVID.

The time frame of the literature searches was from 2009 through June 2012.

The literature search was limited to English literature and search parameters were kept non-specific to prevent unwanted exclusion. Literature was limited to human trials only. An attempt was made to include a wide variety of health care practitioners to incorporate various forms of assessment and treatment. This was done in an attempt to follow the continued trend of multidisciplinary care and the need to efficiently integrate various forms of service and treatment.

The specific search terms used were: "Musculoskeletal injuries" combined with: "Cervical spine", "Lumbar spine", "Spine", "Upper extremity", "Lower extremity", "Shoulder", "Hip", "Knee", "Elbow", "Hand", "Ankle", "Treatment", "Assessment", and "Chiropractic".

### Number of Source Documents

Not stated

### Methods Used to Assess the Quality and Strength of the Evidence

Expert Consensus (Committee)

### Rating Scheme for the Strength of the Evidence

Not applicable

### Methods Used to Analyze the Evidence

Review

## Description of the Methods Used to Analyze the Evidence

Not stated

## Methods Used to Formulate the Recommendations

Expert Consensus

## Description of Methods Used to Formulate the Recommendations

Not stated

## Rating Scheme for the Strength of the Recommendations

Not applicable

## Cost Analysis

A formal cost analysis was not performed and published cost analyses were not reviewed.

## Method of Guideline Validation

Not stated

## Description of Method of Guideline Validation

Not applicable

## Evidence Supporting the Recommendations

### Type of Evidence Supporting the Recommendations

The type of evidence supporting the recommendations is not specifically stated.

## Benefits/Harms of Implementing the Guideline Recommendations

### Potential Benefits

Appropriate evaluation, diagnosis, and treatment of musculoskeletal injuries may lead to:

- Resolution or reduction in pain
- Early return to activities of daily living and/or work activities
- Early recognition of complication factors
- Prevention of pathological tissue degeneration and chronicity
- Minimization of future degenerative changes, especially of joints and connective tissue



## Potential Harms

Peripheralization (spread of symptoms) can occur during active care. If this occurs, the exercise program should be reduced, modified, or discontinued.

## Contraindications

### Contraindications

#### Contraindication or Modifications of Spinal Manipulations

Prior to manipulative techniques, the patient needs to be evaluated by a doctor trained and licensed to perform manipulative therapeutics, for any underlying conditions that, based on the doctor's experience and expertise, would modify or contradict the procedure.

Contraindication or modification of spinal manipulative procedures include:

- Severe sprain/strains: Due to severe instability. The patient should be referred for surgical evaluation, if indicated. Areas of adjacent fixation that are contributing to the instability may be manipulated.
- Rheumatoid or psoriatic arthritis: Due to potential ligament rupture or instability (i.e., transverse ligament instability), forceful manipulation is contraindicated. Use of soft tissue and mobilization techniques with light manipulation may be appropriate.
- Serious vascular disease: History or evaluation of serious vascular disease, including, but not limited to, vertebral artery dissection, vertebral basilar insufficiency, aneurysm, stroke, use of blood thinning medications or clotting disorders.
- Musculoskeletal disorders: History or evaluation of some serious musculoskeletal conditions may require modification or contraindication of some manipulative techniques. These may include, but are not limited to, fracture of the involved area, severe arthritic disease or metabolic disease.

## Implementation of the Guideline

### Description of Implementation Strategy

An implementation strategy was not provided.

## Institute of Medicine (IOM) National Healthcare Quality Report Categories

### IOM Care Need

Getting Better

Living with Illness

### IOM Domain

Effectiveness

Patient-centeredness

## Identifying Information and Availability

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## Adaptation

Not applicable: The guideline was not adapted from another source.

## Date Released

2004 Dec 1 (revised 2013 Dec 1)

## Guideline Developer(s)

Academy for Chiropractic Education - Medical Specialty Society

## Source(s) of Funding

Academy for Chiropractic Education

## Guideline Committee

Not stated

## Composition of Group That Authored the Guideline

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## Financial Disclosures/Conflicts of Interest

Not stated

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## Guideline Availability

Electronic copies: Available from Michael R. O'Connell, D.C., F.I.C.C. at [droconnell@hotmail.com](mailto:droconnell@hotmail.com).

## Availability of Companion Documents

None available

## Patient Resources

None available

## NGC Status

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